



## Markers of Systemic Inflammatory Reaction Syndrome in Patients with Acetic Acid Poisoning

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**Abstract:** Acute poisoning with cauterizing substances occupies from 12 to 16% in the structure of acute poisoning of chemical etiology and III-IV place (7%) in the structure of hospitalizations from the total flow of patients with acute chemical poisoning. One of the most common types of domestic exogenous poisoning with substances of cauterizing action are acute poisoning with acids and alkalis. According to statistics from specialized poisoning treatment centers, on average, 69.6% of all patients hospitalized with poisoning with cauterizing substances were victims of poisoning with concentrated acetic acid.

### Relevance.

It is also important that VPD poisoning is characterized by severe medical, social and economic consequences such as: costly treatment, prolonged disability, disability, high mortality. Poisoning with toxicants of cauterizing action is characterized by high lethality. This is especially true of acetic acid, which averaged 11.7%, respectively, reaching 30.6% in a number of hospitals, and among the deaths caused by caustic poisons, acetic acid was 72.0%. The toxicity of acetic acid is directly proportional to its concentration in the body. 30-70% solution, called acetic essence in everyday life, causes severe chemical burns.

In our country, measures are being taken to study new methods for the prevention of late complications in acute poisoning with acetic acid, new standards for the treatment of patients with acute exogenous poisoning of various etiologies. Such tasks as increasing the efficiency, quality and popularity of medical care, as well as the formation of a system of medical standardization, the introduction of high-tech methods of diagnosis and treatment, the creation of effective models of patronage and dispensary, support of a healthy lifestyle and the function of preventive diseases are noted. One of the important tasks in this regard is to improve the methods of diagnosis and intensive therapy for acute poisoning with cauterizing poisons with the identification of characteristic features of the absorbing ability of tissues and membranes and the study of the state of the immune system depending on the course of the disease [2.4.6.8.10.12.14].

It is practically important to substantiate the feasibility of a comprehensive clinical and immunological examination of patients with acetic acid poisoning. For the purpose of timely prediction of inflammatory complications, diagnosis of pneumonia in patients with acetic acid poisoning, on the

first day the most sensitive and informative indicators are IL-6, IL-10, PCT, D-dimer, C-reactive protein (CRP), the sensitivity and informativeness of which remains on the third day. The study of these indicators in the dynamics of the disease makes it possible to evaluate the effectiveness of complex therapy.

It is confirmed by the use of modern methods and approaches in the study, the consistency of theoretical data with the results obtained, the methodological accuracy of examinations, the adequacy of the number of patients based on general clinical, immunological, dental and statistical research methods, comparison of research results with international and domestic studies based on agreed instructions.

New data have been obtained that expand the understanding of the pathogenesis of infectious complications, it has been established for the first time that in all patients with acute acetic acid poisoning, signs of the development of a systemic inflammatory reaction syndrome are determined already at the time of admission of patients to the hospital. It was determined that in patients with poisoning of the criminal code, in whom the course of the disease is complicated by pneumonia, sepsis, multiple organ failure with a fatal outcome, the number of signs of systemic inflammatory reaction syndrome and organ dysfunction were always elevated during the entire observation period.

The practical significance of the work lies in the fact that the role of changes in the content of IL-6, IL-10, procalcitonin (PCT) in the blood of patients with acute poisoning with acetic acid. It was revealed that in acute poisoning with acetic acid on the first day after hospitalization, there is a significant increase in the content of markers of systemic inflammatory reaction in the blood plasma.

In a dynamic study, it was revealed that the hemoglobin level in patients on day 3 was lower than in patients taken on day 1 by 10.6%. Analysis of the data of the general blood test 5 days after poisoning with acetic acid revealed that the hemoglobin level in patients was also below the normal level, while normocytic, normochromic anemia of moderate severity persisted. During the observed period, the hemoglobin level in patients decreased by 28.4%, the number of red blood cells - by 20.0%,

When assessing the electrolyte composition, it was found that the concentration of chlorides, potassium and sodium in patients was within normal parameters. At the same time, patients had high creatinine levels, and the urea levels of nitrogenous slags were also maximally increased.

Dynamic indicators of the content of pro- and anti-inflammatory cytokines, C-reactive protein, procalcitonin, fibrinogen, and D-dimer are presented. The role of diagnostic sensitivity and informative value of immunological laboratory markers is described in detail.

In order to make a more convincing conclusion about the development of CVD in patients with UK poisoning, the content of cytokines in the blood serum, which are important pathogenetic factors of systemic inflammation syndrome, was analyzed.

Analyzing the data in Table 6 of the dynamics of the IL-10 content, which are presented in Table 6, allows us to conclude that in group III of patients with poisoning of the criminal code, who had a fatal outcome as a result of treatment, a multiple increase in the level of IL-10 in the blood was observed already upon admission to the intensive care unit, which exceeded normal indicators in healthy patients, this indicator was 54.2 times, 12.3 times higher than in patients of group I - in whom the treatment and course of the disease passed without complications, and 4.1 times higher than the IL-10 content in patients of group II – in whom the treatment and course of the disease took place with inflammatory complications in the form of pneumonia.

Fibrinogen is formed as a result of activation of the coagulation cascade. At the same time, it is a nonspecific acute-phase inflammatory protein. Therefore, the increased concentration of fibrinogen reflects the severity of inflammation and activation of hemostasis. We conducted a study of the

dynamic parameters of fibrinogen in patients with UK poisoning, as it also reflects and predicts the development of a systemic inflammatory reaction syndrome [16.18.20].

As can be seen in patients of group I - in whom the course of the disease passed without complications, there were no changes in the dynamic indicators of fibrinogen content (2.7-3.1 g / l). In patients of group II – patients in whom the treatment and course of the disease took place with inflammatory complications in the form of pneumonia, we noted a moderate increase in the content of fibrinogen in the blood within five days after poisoning of the criminal code. In patients of group III – in whom the course of the disease took place with inflammatory complications in the form of pneumonia, sepsis, PON with a fatal outcome, we recorded a significant increase in the fibrinogen content at admission and throughout the entire follow-up period up to 5 days, which was significantly higher than in healthy and group I patients who recovered without complications.

In patients of group I - in whom the course of the disease passed without complications and group II – in whom the course of the disease passed with inflammatory complications in the form of pneumonia, a dynamic increase in the level of D-dimer in the blood is noted on the 1st and 3rd days after admission of patients. In group III patients with a fatal outcome, the level of D-dimer in blood plasma was 13.7 times higher than the values of D-dimer in healthy patients, on the first day after acute poisoning of the criminal code. In group III patients with a fatal outcome, we also observed progression and an increase in the D-dimer index during the entire follow-up on the 3rd and 5th days of treatment.

For practical reasons, in order to timely conduct and effectiveness of complex treatment of complications, inflammatory processes in the lungs, early diagnosis and prediction of the possible development of inflammatory processes in the lungs and its generalization is of great importance. To this end, we conducted studies aimed at finding informative indicators of CVR in assessing the risk of developing pneumonia in the first day of hospital stay [1.3.5.7.9.11.13].

According to the results of the study, the high probability of developing pneumonia in patients with acute poisoning of the criminal code on the first day is indicated by the concentration levels in the blood: IL-6 from 161 pg/ml and more, IL-10 from 66 pg/ml and more, procalcitonin from 0.8 ng/ml and D-dimer with a threshold value 1.48 mcg/ml., and sensitive and prognostic criteria for the risk of death in patients with acute acetic acid poisoning are: determined on the first day after hospitalization, blood concentrations of IL-6 from 201 pg/ml and above, IL-10 from 131 ng/ml and above, procalcitonin from 1.9 ng/ml and above, the content of – D-dimer from 2.93 mcg/ml and above, CRP 29 (mg/l) and above Fibrinogen 5.3 (g/l) and above.

Under the influence of standard therapy, the content of C-reactive protein in blood plasma decreased in patients who recovered. At the same time, the preservation of high levels of C-reactive protein in the blood testified to the insufficient effectiveness of the therapy and the risk of death [15.17.19].

Hence, it is concluded that the syndrome of systemic inflammatory reaction is one of the important factors in the pathogenesis of acute poisoning of the criminal code and complications in the form of pneumonia, developing from the first day of poisoning. The results of our study and the data presented indicate that the course and outcome of complications in patients with poisoning of the criminal code is based on the syndrome of systemic inflammatory reaction, and in cases of severe poisoning of the criminal code, lies - SSVR in combination with the CONCEPT.

## Conclusion

1. All patients with acute poisoning with acetic acid upon admission to the hospital have signs of the development of a systemic inflammatory reaction syndrome. At the same time, the clinical signs of a systemic inflammatory reaction syndrome (an increase in body temperature, an increase in heart

rate, respiratory rate) are non-specific and have diagnostic significance only in combination with laboratory indicators.

2. In acute poisoning with acetic acid on the first day after hospitalization, there is a significant increase in the blood plasma content of markers of systemic inflammatory reaction: IL-6, IL-10, procalcitonin. The content of IL-10 in the group of patients, in recovered patients – the course of the disease in which was complicated by pneumonia, exceeded normal values in healthy patients by 12.3 times (66 (54;82) pg/ml), and in the group of recovered patients – the course of the disease in which was complicated by pneumonia, sepsis. multiple organ failure resulted in a fatal outcome of 54.2 times (271 (94;391) pg/ml) in the group of patients who had quarreled without complications by 4.1 times (22 (10; 44) pg/ml). Upon admission, the IL-6 content was 32.2 (161 (99; 209) pg/ml) high in the group of patients with pneumonia, 65 times (325(173; 516) pg/ml) in the group of patients with pneumonia, sepsis and death, 12.4 times (62 (42;91) pg/ml) in the group of recovered patients without complications. We concluded that an increase in the concentrations of IL-6 and IL-10 in the blood serum of patients with UK poisoning upon admission and up to 5 days of follow-up is an important evidence of the development of systemic inflammation.

#### LITERATURE USED

1. Abdurakhmanov M.M., Kuvatov Z.Kh. Mechanisms of hemostasiological reactions and dysfunction of the vascular wall endothelium in patients with acute acetic acid poison // Тиббиётда янги кун. – Бухара, - 2021. - № 2(34). - С.132-135. (14.00.00., №22)
2. Абдурахманов М.М., Куватов З.Х. Системный Воспалительный ответ у больных с острыми отравлениями уксусной кислотой. // Журнал теоретической и клинической медицины. – Ташкент, - 2021. - №4. – С. 49-51. (14.00.00., №03)
3. Куватов З.Х. Взаимосвязь ибринолиза и системного воспалительного ответа у больных с отравлениями уксусной кислотой // . Журнал теоретической и клинической медицины. – Ташкент, - 2021. - №4. – С. 56-58. (14.00.00., №03)
4. Quvatov Z. S., Systemic inflammatory response in patients with exotoxic shock with acute acetic acid poisoning.// American Journal of Medicine and Medical Sciences. USA, - 2022. – VOL. 12(5), P. 551-553.
5. Quvatov Z. S., Abdurahmonov M.M. Indications for Disorders of Central Hemodynamics and Transcapillary Metabolism in Patients with the Toxicogenic State of Acetic Acid Poisoning // Central Asian journal of medical and natural sciences. Испания, - 2022. -Vol. 3 (Issue 3). - P. 519-521. (SJIF Index- 5.526).
6. Quvatov Z. S., Abdurahmonov M.M. Systemic Inflammatory Response in Patients with Acetic Acid Poisoning// International Journal of Integrated Education 6 jun 2022 issn:2620-3502 № 234-236
7. Quvatov Z. S., Abdurahmonov M.M Medical Care for Patients with Acute Acetic Acid Poisoning with Exotoxic Shock// Middle European Scientific Bulletin issn 2694-9970 № 142-145.
8. Абдурахманов М.М., Куватов З.Х. Сирка кислотаси билан захарланган беморларда фибринолиз ва ва тизимли яллигланиш реакцияси.// Тиббиётда янги кун. – Бухара, - 2022. - № 9(47) - С.284-286
9. Абдурахманов М.М., Куватов З.Х. Сирка кислотаси билан захарланган беморларда тизимли яллигланиш реакцияси синдроми лаборатория тадқиқотларининг диагностика сезгирлиги ва информатсион киймати// Тиббиётда янги кун. – Бухара, - 2022. - № 9(47) – С 444-448.

10. Куватов З.Х., Саидова Л.Б. Improving the quality of rendering assistance with acute poisons of psychopharmacological preparations according to the Bukhara center of emergency medical assistance in the toxicology division// Prospects of world science-2019 july 30-August 7, 2019 C 127- 130
11. Quvatov Z. Saidova L.B., Saidova M.K., Real practice: cardiac glycosid poisoning-difficulties of diagnosis and treatment. 4 th International eduindex multidisciplinary conference. Isbn:978-9386954-30-5 C 37-38
12. Куватов З. Х., Шодиев А. С. Профилактика кардиотоксических осложнений с применением в-адренергических блокаторов в лечении острых отравлений амитритилином // Сборник тезисов. Тошкент 2020г С 140-141
13. Куватов З. Х., Саидова М. К. Отравление сердечными гликозидами трудности диагностики и лечения в реальной практике // Наука и инновации-современные концепции. Москва 2020 г
14. Куватов З. Х., Гафаров У. Р. Распространенность, организация и тактика неотложной помощи при острых отравлениях психофармакологическими препаратами по данным бухарского центра экстренной медицинской скорой помощи в отделении токсикологии// Высшая школа: научный исследования Москва 2020 г С 86-89
15. Куватов З. Х., Гафаров У. Р. Острые химические отравления, встречающиеся в подростковом возрасте //Высшая школа: научный исследования Москва 2020 г С 90-92
16. Абдурахманов М. М., Куватов З. Х. Механизмы гемостазиологических реакций при отравлении уксусной кислотой// Вестник Ташкентской медицинской академии ISSN-2181-7812 2021г С113-114
17. Абдурахманов М.М., Куватов З.Х. Состояние эндотелия сосудов при отравлении уксусной кислотой //«Современная медицина и информационные технологии в процессе обучения в период пандемии COVID-19» Сборник статей и тезисов 22.01.2022г Бухара. С 10-11
18. Quvatov Z Indications for fibrinolysis and detection of systemic inflammatory reaction in patients with acetic acid poisoning.// Innovative Society: Problems, Analysis and Development Prospects 15<sup>th</sup>-16<sup>th</sup> April 2022 C 263-264
19. Мусоев Т.Я., Куватов З. Х. Нарушение сердечной деятельности у больных с острым отравлением уксусной кислотой // «Актуальные проблемы современной медицины и пути их решения» Сборник и тезисов. 30.10.2021 г Бухара. С 36-37
20. Куватов З.Х., Абдурахманов М.М. Роль синдрома системной воспалительной реакции в течении и исходе осложнений при отравлениях уксусной кислотой // Методические рекомендации. – Ташкент. – 2022. - 20 с.